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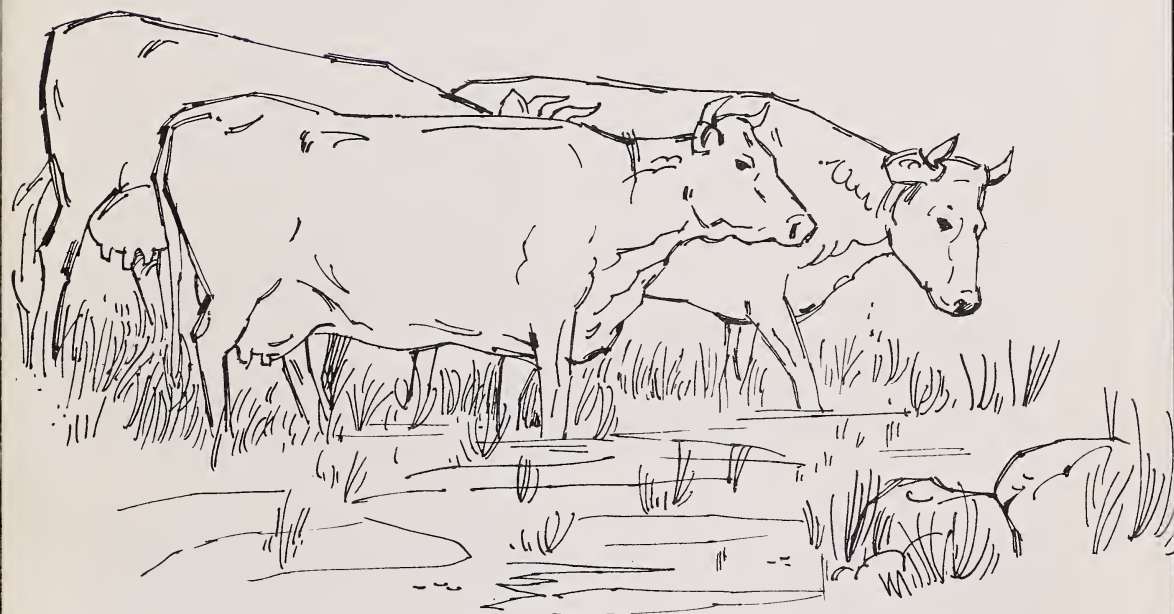
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ANTHRAX IN LIVESTOCK



how to fight it

PROGRAM AID No. 431
U.S. DEPARTMENT OF AGRICULTURE

ANTHRAX IN LIVESTOCK

how to fight it

Anthrax is an infectious disease that may produce swift death, chronic illness, or localized infection in man and animals. Most cases occur in cattle, horses, mules, sheep, or goats. Dogs, cats, wild animals of prey, and hogs occasionally become infected; poultry rarely does.

Because anthrax develops rapidly and because it kills some animals that never show any signs of disease, outbreaks often have caused hysteria and led to frantic selling of livestock. However, anthrax need not cause panic; today, the disease can be effectively controlled or—in many instances—prevented.

Vaccination is an effective preventive measure. Antibiotic treatment and vaccination are helpful in fighting anthrax outbreaks.

Conditions favorable to anthrax exist in “anthrax districts,” where the disease recurs periodically. In the United States, sections of Arkansas, California, Louisiana, Mississippi, Nebraska, New York, South Dakota, and Texas are recognized as anthrax districts. Outbreaks are not limited to these districts, however.

Each State has a disease-control program for anthrax; regulatory measures include use of vaccines and

quarantines to stop the spread of disease. Federal veterinarians cooperate with State officials in carrying out the control programs.

CAUSE

The anthrax organism takes two forms:

- The bacillus—which is the active, growing form—causes infection in the body of a susceptible animal or in man.
- The spore—which is the inactive, resistant form—provides protection against the unfavorable environments outside the animal's body.

Usually, the bacillus changes to the spore form when it is discharged from an animal's body or when it is exposed to air at the time an anthrax-infected carcass is opened. When a spore enters a susceptible animal's body, it develops into the bacillus form.

The bacillus survives for only a short time outside an animal's body; it is readily killed by heat, sunlight, drying, and disinfectants. In contrast, the spore is resistant and survives for many years in dry soil, in feed, and in hides. Prolonged exposure to heat or strong lye solutions will kill spores.

SPREAD

Anthrax is spread by spores. When susceptible animals are exposed to spores, they usually develop anthrax.

Infected animals and carcasses are primary sources of spores, which are found in body discharges; on hair, hides, and wool; and in bone-meal, meatscraps, tankage, and other byproducts. Pastures, feeds, and water become contaminated from the spores that are spread by infected animals, infected carcasses, and their products.

Normally, an animal becomes infected by grazing on spore-laden pastures or by eating feed that contains spores. Spores may enter an animal's body through skin abrasions, insect bites, or inhaled dust.

Anthrax may break out in new areas when infected animals, contaminated feeds, or contaminated forages are moved from farm to farm or from farm to market. Often, the disease occurs along transportation routes.

SIGNS OF ANTHRAX

Generalized Anthrax

Generalized anthrax—the most common form—affects cattle, horses, mules, sheep, and goats. It is known as acute or subacute, depending upon the length of time the animal is visibly sick. Usually, generalized anthrax is fatal within 1 or 2 days, but it may continue for 5 days. Few infected animals recover without treatment.

Occasionally, a seemingly healthy animal suddenly staggers, has convulsions, and dies. More often, infected animals die without showing signs of disease.

Bloody discharges may pass from the mouth, the nose, and the anus. Other indications of generalized anthrax are high temperature; excitement followed by depression; stupor; chills; muscular weakness; and colic or respiratory difficulties. Pregnant cows may abort; milk production of infected cows may drop sharply.



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Typical western anthrax district. Unvaccinated animals grazing on spore-laden, water-damaged grass developed anthrax.

Localized Anthrax

Cases of localized anthrax often accompany an outbreak of generalized anthrax. Usually, infection is confined to a specific site—a muscle, a patch of skin, the throat, the tongue, or other small area. This form of anthrax seldom causes death unless the infection spreads to vital organs.

If animals with localized anthrax receive treatment, they usually recover gradually.

Localized anthrax occurs most often in hogs, but cattle, horses, mules, and dogs also may develop it.

Affected animals may become visibly sick. In hogs, marked swellings of the throat and tongue frequently are accompanied by blood-stained, frothy discharges from the mouth. Throat swellings may cause suffocation.

In cattle, swellings are most common along the brisket and belly; in horses and mules, throat and shoulder areas are frequently affected. Swellings heal slowly. Cattle, horses, and mules with lo-

calized anthrax may lose condition gradually, although they may not develop other symptoms.

Animals may develop a localized skin infection—or cutaneous anthrax—when organisms lodge in an open wound or skin abrasion. **It is this form of anthrax that humans sometimes get when they handle diseased animals or carcasses without proper precautions.**

Appearance of Dead Animal

After an animal dies of anthrax, dark “tarry” blood usually oozes from natural body openings. The carcass becomes abnormally bloated and decomposes rapidly, but normal rigor mortis does not occur.

Hemorrhages beneath the skin are common. Clear or blood-tinged, gelatinous discharges come from body swellings and insect bites.

Generalized anthrax may be confused with lightning stroke, sunstroke, lead poisoning, blackleg, malignant edema, and many other conditions that produce sudden death.



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Eastern meadow-marsh. Cattle that graze this area are vaccinated annually to prevent anthrax outbreaks.

OUTBREAKS

Anthrax usually breaks out in livestock on pasture when the following conditions exist:

- Anthrax spores have become established in soil and on grass.
- Soil is alkaline or somewhat neutral. Anthrax is practically unknown on first-class agricultural soils.
- Heavy rains or floods are followed by a prolonged hot, dry period—a combination known as anthrax weather. Normally, outbreaks occur during late summer or early fall when temperatures are above 60° F. Droughts not preceded by floods do not produce anthrax outbreaks.

Anthrax sometimes occurs in the winter among animals that are fed feeds contaminated with spores.

PRECAUTIONS

Do not open the carcass of any animal that has died of anthrax, that is a suspected victim of anthrax, or that died suddenly of no apparent cause. Call a veterinarian to examine the carcass and to make a diagnosis. Opening carcasses without taking proper precautions often causes anthrax in humans and leads to further outbreaks.

Observe the following precautions if anthrax has been diagnosed, or if the reason for the animal's death is undetermined—

- Saturate the carcass with waste oil or kerosene to keep other animals and insects from feeding on it.
- Do not skin the carcass.
- Do not feed the carcass to other farm animals.
- Do not take the carcass to a rendering plant.

PREVENTION

Anthrax sometimes can be prevented or outbreaks can be significantly reduced through individual prevention programs. Vaccination is essential to these programs. Other recommended practices:

- Fencing off or filling swampy areas and bottomlands on which anthrax carcasses have been buried.
- Preventing unvaccinated animals from grazing contaminated areas. Do not feed unvaccinated animals hay, straw, or other forage originating on lands known to be contaminated by anthrax.
- Controlling flies, stray dogs, and scavenger animals.
- Learning the location and characteristics of known anthrax-contaminated soils in anthrax districts.
- Following recommended measures for proper sanitation.

VACCINATION

Vaccines protect animals against anthrax and usually control the disease after outbreaks occur.

Have a veterinarian give all anthrax vaccinations. Generally, vaccines are used only on premises where a threat of anthrax exists. A veterinarian can advise you about vaccines. In the United States today, a noncapsulated vaccine is widely used to control anthrax.

In anthrax districts, cattle, horses, mules, sheep, and goats should be vaccinated annually. Sometimes, hogs are vaccinated. Usually, animals are vaccinated 4 to 6 weeks before the beginning of the anthrax season. In districts with long anthrax seasons, animals are given a booster shot in 4 to 6 months.



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Heifer with localized anthrax. Swelling beneath belly is typical of this form of anthrax. The animal recovered.

DIAGNOSIS

When an animal dies suddenly of no apparent cause or when you have reason to suspect anthrax, immediately notify your own veterinarian or your State disease control officials. The veterinarian who examines the suspected anthrax-infected carcass will obtain materials needed for laboratory tests. Such tests are the only accurate way to diagnose anthrax.

CONTROL

When anthrax is diagnosed as the cause of an animal's death, the State disease control agency starts its anthrax program. Although these programs vary in individual States, all are designed to—

- Stop the spread of anthrax as swiftly as possible.
- Reduce livestock losses.
- Prevent contamination that might lead to future outbreaks.

Cooperation of livestock producers in the affected district is essential to the success of any program to control anthrax.

Measures to control anthrax outbreaks include—

- Quarantines of contaminated premises or areas. State officials may quarantine affected farms, ranches, or districts until anthrax no longer is a problem.
- Prompt disposal of dead animals.
- Careful examination of all livestock on the affected farm or ranch, with isolation and prompt treatment of visibly sick animals.
- Vaccination of exposed animals not previously vaccinated.
- Destruction of manure, bedding, and other contaminated materials.
- Cleaning and disinfection of contaminated buildings in which animals have died of anthrax.
- Change of pastures, if practical.
- Control of flies that might spread anthrax bacilli and spores.

Disposal of Carcasses

As soon as the diagnosis is confirmed, carcasses of animals that have died of anthrax should be disposed of by complete burning or deep burial.

Burn or bury the carcass where it is found. In unusual circumstances when the carcass must be moved, handle it with materials that can be burned or disinfected and move it on a vehicle that can be disinfected with lye. Do not drag the carcass or allow it to contaminate the soil over which it moves.

First saturate the carcass with oil or kerosene. Then sear the area around the carcass. Begin burning at both the head and rear quarters so that heat can dry fluids in the digestive tract. Make sure all bits of bone, teeth, and hoof are completely burned.

Do not bury carcasses unless burning is impractical, or there are many animals to be disposed of.

Bury every carcass under at least 6 feet of soil. Then saturate the area with oil and burn it over.

Treatment

Early treatment of infected animals will increase their chances for recovery. When an outbreak occurs, check all livestock frequently. Isolate and begin prompt treatment of affected animals.

Consult a veterinarian about using the proper antibiotics or anti-anthrax serum. They are effective in treating animals in early stages of anthrax. Treatment of animals in advanced stages is less successful.

Contaminated Materials

Carefully remove manure, bedding, and other contaminated materials from buildings and runways used by infected animals. Burn contaminated feed, bedding, and manure with the animal's carcass or burn them separately.



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Carcass of animal dead of anthrax. Blowflies are feeding on it.

Cleaning and Disinfection

If an animal dies of anthrax inside a barn or other building, the building must be thoroughly cleaned and disinfected. Cleaning and disinfection should kill all anthrax bacilli and spores; contamination that survives can trigger later outbreaks.

Use a solution containing 5 percent of lye for disinfection. To make the solution, dissolve $2\frac{1}{2}$ pounds of lye in $5\frac{1}{2}$ gallons of water. Apply it immediately.

Caution: Lye is a caustic poison. Use extreme care in handling it.

Thoroughly soak all walls, partitions, ceilings, and floors of cleaned buildings with the lye solution. Let it remain at least 24 hours; then rinse the interior with water before rehousing livestock.

Disinfect equipment used in handling the carcass by soaking in or by saturating with the lye solution.

If trucks or other vehicles are used to transport infected or exposed animals, disinfect beds and other contaminated areas with the lye solution. Leave the solution on vehicles 8 hours; then wash it off.

ANTHRAX IN MAN

In man, anthrax may occur as a localized infection or as a generalized infection.

Usually, man contracts anthrax by handling a diseased carcass or contaminated wool, hair, hides, or animal byproducts. Most cases occur among farmers, ranchers, veterinarians, and packinghouse workers—who examine, skin, or butcher animals that have died of anthrax—and among industrial workers—who process contaminated wool, hides, and hair.

Anthrax of the skin is the most common form in man. This form usually produces a localized infection, which may develop into a generalized infection.

Workers who handle diseased animals may become infected if anthrax organisms lodge in an open wound or skin abrasion on their hands, arms, faces, or other exposed areas. Anthrax of the skin has been reported following bites of insects that carry spores. The first symptom of infection is a small pimple, which enlarges painlessly. Later, a black center develops.

After you have handled products that could have been contaminated with anthrax spores, examine your hands, arms, and face often. **Consult a physician at once if a pimple develops and begins to enlarge.** A physician can successfully cure anthrax of the skin when treatment with antibiotics is begun early. Fatal blood infection may result if the disease is not treated.

Inhalation anthrax, or woolsorters' disease, produces a generalized infection that often is fatal. This form develops after workers inhale spores during the processing of contaminated wool, hair, or hides.

Generalized anthrax that develops through the gastrointestinal tract usually is fatal. This form has not been reported in the United States.

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Prepared by

Animal Disease Eradication
Division

AGRICULTURAL RESEARCH SERVICE

Washington, D.C.

Issued April 1961